

Listing of the Claim:

This listing of the claims will replace all prior versions, and listings, of claims in the application. Please cancel claims 1-23 and add new claims 24-35.

Listing of the Claim:

(Claims 1-23 have been cancelled.)

24.(New) A method of operating a multi-state non-volatile memory, wherein each of said multi-states is identified with a corresponding one of a plurality distinct non-contiguous threshold voltage ranges, the method comprising:

identifying a memory cell as having a threshold voltage in a range intermediate to the threshold voltage ranges corresponding to a first of said multi-states and a second of said multi-states, wherein the first and second multi-states correspond to adjacent ones of said distinct non-contiguous threshold voltage ranges;

writing the identified memory cell to have a threshold voltage in the range corresponding to one of said first and second multi-states.

25.(New) The method of claim 24, wherein in response to said identifying a memory cell determining that the identified memory cell has a threshold voltage in a portion of said intermediate range that is adjacent to the one of the first and second multi-states having the higher threshold voltage range, said writing writes the identified memory cell to said one of the first and second multi-states having the higher threshold.

26.(New) The method of claim 25, wherein in response to said identifying a memory cell determining that the identified memory cell has a threshold voltage in a portion of said intermediate range that is adjacent to the one of the first and second multi-states having the lower threshold voltage range, said writing writes the identified memory cell to said one of the first and second multi-states having the lower threshold.

27.(New) The method of claim 26, wherein said writing includes:

erasing said identified memory cells; and

subsequently programming said identified memory cell to have a threshold voltage in the range corresponding to said one of the first and second multi-states having the lower threshold.

28.(New) The method of claim 24, wherein said identified memory cell belongs to a sector of cells and wherein said writing the identified memory cell is performed as part of writing all of the cells in said sector.

29.(New) The method of claim 28, wherein said writing all of the cells in said sector comprises:

copying said sector to a buffer memory;
altering in the buffer memory the data of content of the identified memory cell to correspond to said one of said first and second multi-states; and
programming said sector back into the non-volatile memory.

30.(New) The method of claim 29, wherein said sector is programmed back into the same physical sector from which it was copied.

31.(New) The method of claim 29, wherein said sector is programmed into a different physical sector than that from which it was copied.

32.(New) The method of claim 28, wherein in response to said identifying a memory cell, a flag associated with the sector to which the identified memory cells belongs is set; and wherein the writing of said sector is performed in response to said flag being set.

33.(New) The method of claim 32, wherein said writing of the sector performed in response to said flag being set is performed during a period when the memory is inactive.

34.(New) The method of claim 24, wherein said method is performed as part of a systematic refresh process.

35.(New) The method of claim 24, wherein said memory cell is an EEPROM memory cell.